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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/311,070	05/13/1999	YOSHIHARU HIRAKATA	0756-1971	9732

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EXAMINER

NGUYEN, DUNG T

ART UNIT PAPER NUMBER

2871

DATE MAILED: 03/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/311,070

Applicant(s)

HIRAKATA ET AL.

Examiner

Dung Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on 09 December 2002.

2a) ☐ This action is FINAL.

2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-11 and 14-24 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) 5-7, 10 and 11 is/are allowed.

6) ☒ Claim(s) 1-4, 8, 9 and 14-24 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 13 May 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some * c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

4) ☐ Interview Summary (PTO-413) Paper No(s) _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/09/2002 has been entered.
2. Applicants' amendment filed 10/08/2002 has been received and entered.

Drawings

3. Figures 10-21 stand objected to as stated in the office action dated 12/06/2001.
Applicants state that a Request for Drawing Change Approval is submitted (amendment, page 2); however, there is no Request for Drawing Change Approval in file.
A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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5. Claims 1-4 and 8-9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Masaya et al., JP 07-230101, in view of Iwaki et al., US Patent No. 5,168,383, as stated in the final office action.

Regarding claims 1-9, Masaya et al. disclose an active-matrix LCD (figure 11) comprising:

- a switching element (thin film transistor TFT);
- a pixel electrode (410) connected to the switching element;
- a first reflective layer (a dielectric multi-layer film 409) contacted with the pixel electrode;
- a liquid crystal layer (414) inherently sealed between a pair of substrate (401, 411).

Although Masaya et al. do not explicitly disclose a thickness of the pixel electrode being in the range of 50.5nm to 88.4nm, Iwaki et al. do disclose a thickness of the pixel electrode can be formed in the range 200 to 2000 (col. 3, ln. 26). Thus, such disclosed range in Iwaki et al. makes possible the claimed range of 50.5nm to 88.4nm, and overlapping ranges are at least obvious. In re Malagari, 499 Fed.2d 1297, 182 USPQ 549 CCPA 1974.

Applicants, again, contends that Masaya et al. and Iwaki et al. do not teach, disclose, or suggest the thickness of the pixel electrode that is satisfied with $\lambda/4$ (amendment, page 5). The Examiner, again, respectfully disagrees with the applicants' viewpoint. As stated in the previous office action, the Applicants' pixel electrode and the Iwaki et al. pixel electrode both have the same material (e.g., transparent conductive material) and the Iwaki et al. electrode thickness range (i.e., 200 to 2000Å) includes the claimed range (i.e., 50.5nm to 88.4nm). Therefore, the thickness of the Iwaki et al. electrode would be at least obvious to the equation $nd = \lambda/4$ (see In

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re Malagari, 499 Fed.2d 1297, 182 USPQ 549 CCPA 1974). Furthermore, one skilled in the art would be able to select a electrode thickness that is satisfied with $\lambda/4$ for providing desired electrical characteristics (e.g., reflectivity) (see Iwaki, col.3, ln. 28).

Accordingly, the rejection of claims 1-9 stand.

6. Claims 17-19, 21 and 23 stated rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al., US Patent No. 6,108,056, in view Masaya et al., JP 07-230101, as stated in the final office action.

Regarding claims 17-19-21 and 23, Nakajima et al. disclose an active-matrix LCD (figure 8) comprising:

- a switching element (thin film transistor TFT);
- a pixel electrode (118) connected to the switching element;
- a first reflective layer (a dielectric film 117) below the pixel electrode;
- a second reflective layer (116) below the first reflective layer (117), wherein the pixel electrode, the first reflective layer and the second reflective constitute a capacitance (120);
- a liquid crystal layer inherently sealed between a pair of substrate (according to an active matrix LCD device).

However, Nakajima et al. do not disclose the dielectric film comprising a multi-layer film. Masaya et al. do disclose a dielectric film can be a multi-layer film (e.g., multilayer reflecting mirror, 409) as shown in figure 11. Therefore, it would have been obvious to one skilled in the art at the time of the invention made to modify the Nakajima et al. device having a multi-layer dielectric film as shown by Masaya et al., since it is a common practice in the art to obtain a bright clear display image (see detailed description, paragraph [005]).

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Applicants contend that Nakajima does not teach or suggest anything about reflectivity since layer 116 operates as a black matrix and thus cannot operate as a reflective layer (amendment, paragraph bridging pages 3-4). The Examiner agrees that the layer 116 operates as a black matrix; however, it does not mean that such layer cannot be reflected. It should be noted that such layer 116 is formed by titanium and, as asserted by Applicants (amendment, page 4, line 2), even if the titanium electrode has a low reflectivity, such material titanium does have a reflectivity as claimed.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the modification to the Nakajima et al. dielectric film (117) by forming a multi-layer dielectric film as shown by Masaya et al. would improve a display characteristic as stated in paragraph [005]. In addition, Applicants also contend that such modification may well destroy the functionality of interlayer insulating 117 of Nakajima; however, Applicant provides no evidence to support such contention. Therefore, it would have been obvious to combine the teachings of the applied references to arrive at the claimed invention.

Accordingly, the limitation of the above claims met.

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7. Claim 14-16, 20, 22 and 24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al., US Patent No. 6,108,056, in view Masaya et al., JP 07-230101, further in view of Sato et al., US Patent No. 5,461,501, as stated in the previous office action

Regarding the above claims, the modification to Nakajima et al. disclose the claimed invention as described above except for the use of aluminum (Al) based materials for the reflection layer as well as a reflection area of the reflection layer is greater than an electrode area of the pixel electrode. Sato et al. disclose an aluminum shading layer (111) can be formed under a pixel electrode (figure 9) and a reflection area of the reflection layer is greater than an electrode area of the pixel electrode (figure 10). Therefore, it would have been obvious to one skill in the art to form the Nakajima et al. reflection film by aluminum and having an area greater than an electrode area of the pixel electrode as shown by Sato et al. in order to reduce a photo-current in an LCD display (col. 10, ln. 59).

In response to applicant's argument that Sato does nothing to overcome the deficiencies of Nakajima et al. (amendment, page 5), it is noted that the modification to Nakajima et al. do disclose a second reflective layer as stated above. Therefore, it would have been obvious to combine the teachings of the applied references to arrive at the claimed invention.

Accordingly, the rejection of claims 14-16, 20, 22 and 24 stand.

Allowable Subject Matter

8. Claims 5-7 and 10-11 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

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None of the prior art suggests or disclose a reflection layer on a transparent conductive common electrode and a pixel electrode formed on the reflection layer to form an auxiliary capacitance as set forth in claims 5 and 10.

Response to Arguments

10. Applicant's arguments filed 10/08/2002 have been fully considered but they are not persuasive as sated above. .


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Nguyen whose telephone number is 703-305-0423. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7726 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

DN
03/05/2003


Dung Nguyen
Patent Examiner
GAU 2871